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2. (Amended) The isolated nucleic acid sequence according to Claim 1, wherein said tocopherol cyclase is active in the cyclization of 2, 3-dimethyl-5-phytylplastoquinol to tocopherol.

3. (Amended) The isolated nucleic acid sequence according to Claim 1, wherein said tocopherol cyclase is active in the cyclization of 2, 3-dimethyl-5-geranylgeranylplastoquinol to tocotrienol.

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5. (Amended) The isolated DNA sequence according to Claim 4, wherein said eukaryotic cell source is selected from the group consisting of mammalian, nematode, fungal, and plant cells.

6. (Amended) The DNA sequence of Claim 5, wherein said tocopherol cyclase is from *Arabidopsis*.

7. (Amended) The DNA sequence of Claim 6, wherein said tocopherol cyclase is encoded by a nucleotide sequence of SEQ ID NO: 109.

8. (Amended) The DNA sequence of Claim 7, wherein said tocopherol cyclase has an amino acid sequence of SEQ ID NO: 110.

9. (Amended) The DNA sequence of Claim 4, wherein said tocopherol cyclase is from a source selected from the group consisting of *Arabidopsis*, soybean, corn, rice, wheat, leek, canola, cotton, and tomato.

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11. (Amended) The DNA sequence of Claim 10, wherein said tocopherol cyclase is encoded by a nucleotide sequence of SEQ ID NO: 38. *Synthetic*

12. (Amended) The DNA sequence of Claim 10, wherein said tocopherol cyclase has an amino acid sequence of SEQ ID NO: 39.

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16. (Amended) A nucleic acid construct according to Claim 15, wherein said nucleic acid sequence encoding tocopherol cyclase is obtained from a source selected from the group consisting of *Arabidopsis*, soybean, corn, rice, wheat, leek, canola, cotton, and tomato.

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18. (Amended) A plant cell comprising the construct of Claim 13.

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26. (Amended) A method for the alteration of the isoprenoid content in a host cell, said method comprising transforming said host cell with a construct comprising as operably linked components, a transcriptional initiation region functional in a host cell, a nucleic acid sequence encoding tocopherol cyclase, and a transcriptional termination region, wherein said isoprenoid compound is selected from the group consisting of tocopherols and tocotrienols.

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30. (Amended) The method according to Claim 29, wherein said plant cell is obtained from a plant selected from the group consisting of *Arabidopsis*, soybean, corn, rice, wheat, leek, canola, cotton, and tomato.

31. (Amended) A method for producing an isoprenoid compound of interest in a host cell, said method comprising obtaining a transformed host cell, said host cell having and expressing in its genome:
a construct having a DNA sequence encoding a tocopherol cyclase operably linked to a transcriptional initiation region functional in a host cell,
wherein said isoprenoid compound is selected from the group consisting of tocopherols and tocotrienols.

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35. (Amended) The method according to Claim 34, wherein said plant cell is obtained from a plant selected from the group consisting of *Arabidopsis*, soybean, corn, rice, wheat, leek, canola, cotton, and tomato.